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Liabilities for autonomous systems in the civil domain

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A new task allocation

- As human delegate tasks to autonomous systems humans, humans still
 - Design, select and program ASs
 - Provide instructions to ASs
 - Cooperate ASs tasks through co-agency and interaction
 - Monitor ASs, possibly overriding them when needed
 - Do nothing. ASs accomplish tasks without human interference

E.g.: autonomous cars, autonomous flight systems, service robots for health care, etc.

- Who is liable if the AS causes harm? What happens in the civil domain?



The usual legal framework : criminal liability

- Intentional offences
 - Actus Reus: Conduct + Results
 - Mens Rea: Intent, knowledge, or recklessness (awareness of possibility) of actus reus (harm)
- Negligent offences
 - Actus Reus
 - Mens Rea: unjustified lack of awareness of actus reus
- *E.g.: causing death by shooting, blasting a bomb, driving while drunk, driving too quickly*



Criminal liabilities and ASs





Changes for ASs: criminal responsibility (1)

- Users' individual criminal responsibility:
 - Intentional user's crime when an AS is deployed with the intention or knowledge that it will engage in criminal conduct
E.g., AS is directed to commit a criminal action, e.g., kill a person (a civilian)
 - Intentional user's crime when the AS is deployed knowing that it will engage in criminal conduct, though this is not the purpose of its use.
E.g., an AS is directed to destroy a facility where humans are known to be present



Changes for ASs: criminal responsibility (2)

- Reckless user's crime when an AS is deployed with the awareness that it might accomplish a criminal conduct.
E.g. E.g., an AS is directed to destroy a facility where humans are known to be present
- Negligent user's crime (user's lacking awareness of unreasonable risk)
E.g. E.g., an AS is directed to destroy a facility where humans are wrongly believed not to be present



Changes for ASs: criminal responsibility (3)

- What about cases where the AS commits an action that would count as a crime, if it were committed by a human, but there is no intention nor recklessness, nor relevant negligence in the user?
 - *E.g. May an AS kills or destroy to achieve the goal assigned to it, without intent or awareness or recklessness or negligence in its user?*
 - *How to prove the mental state of the user?*
- A responsibility gap? Yes, but is it a problem?



The usual legal framework: civil liability

- Personal liability for intentional harm
- Personal liability for negligence
- Exceptional cases of personal strict liability
(dangerous things and activities, animals)

E.g.: Causing a person to be harmed by punching him, inadvertently pushing him down a stair, your dog bites him



The usual legal framework: civil liability (2)

- Other sources of liability without fault of the responsible actor (mainly an enterprise)
 - Organizational malfunctioning
 - Vicarious liability (for employees)
 - Strict liability for technological risk (dangerous activity),
 - Product liability (technical standards),
 - Statutory negligence
- *E.g.: Harming through industrial pollution, the acts an employee, an explosion in power plant, a defective product, etc.*



Civil liabilities and ASs





Changes for AS: Civil liability (1)

- Personal liability for intentional tort (quite rare intentional unlawful harm usually count as crimes):
 - As for intentional crimes
- Personal liability for negligence:
 - Negligent deployment of the AS
 - Negligent choice to deploy it for a task for which it is unsuitable (problem: how to determine unsuitableness)



Changes for AS: Civil liability (2)

- **Strict liability**
 - Like liability for animals or for employees when the AS causes damage?
 - Liability for dangerous activity, product liability, organisational liability ?
 - By analogy liability as for animals or employees
- **Liability gap? Maybe**
 - Problem: What if the AS causes damage without human fault and no other source of liability is applicable
 - How to prove fault?
- **Compulsory insurance? Strict liability with a cap?**



Into science-fiction. Sanctioning ASs?

- Can ASs engage in crimes and torts? Can they perform an Actus Reus and have a Mens Rea?
- If so, they can commit crimes?
- But what sanctions can be applied to them?
- Do they have their own assets, and/or can they experience blame?



Conclusions

- ASs make a change in criminal liability.
 - There is a criminal liability gap since ASs may commit criminal act without human mens rea.
 - However, this has limited significance in the non-military domain (focus on efficiency and limiting harm)
- ASs shift civil liability from the individual performers to individuals controlling ASs, producers, and organisations using ASs
 - There does not seem to be a significant civil liability gap, since usually liability to compensate damage caused by AS will be allocated to somebody.
 - Evidence issues: The record of the activities of the AS can provide evidence, but ...



Conclusion (2)

- In what are legally LAWs different from civil applications (e.g. autonomous cars)?
 - Proportionality (between harm and military goal) provides justification unavailable in the civil domain
 - Danger to others is intrinsic
 - No justification in balancing social advantages and disadvantages
 - No strong incentive for minimising damage
 - Command responsibility for harm caused by autonomous systems is distinct from vicarious liability



- Thanks for your attention

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